

**MERCURIALIZED SERUM INJECTIONS
IN SYPHILITIC NERVOUS DISEASES.***

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The intradural treatment of syphilis of the nervous system has received a constantly increasing amount of attention since the publication of the results of Swift and Ellis. Even before the efficacy of that method could be finally settled, the scarcity of salvarsan made its use almost prohibitive. Therefore, in July, 1915, in the Neurological Clinic of the Stanford Medical School, we began to treat a series of cases using the Byrnes method of mercurialized serum injections. The following is a preliminary report of that work (thirty cases—190 injections), to be followed by later observations of these cases and a comparison of the results of the Byrnes method with the Swift-Ellis technic and the combined method.

The material used was particularly fortunate in that most were old clinic cases that previously had been given very thorough treatment with salvarsan and mercury, with little result. The fact that these cases had treatment by other anti-leuitic methods eliminates one of the factors of uncertainty from our results. The fact that our series includes paresis (7 cases), tabes (18 cases), cerebro-spinal lues (5 cases) shows the value of this treatment in a wide range of conditions.

We made no effort to select favorable cases for treatment—first because we were anxious to note its effect upon all types; secondly because, while early cases always responded more favorably to treatment, an occasional good result would occur even in apparently hopeless cases.

In the technic of the treatment we followed the original Byrnes description.

As far as the inconveniences, complications and dangers of the method are concerned, we had no fatalities, indeed no alarming symptoms. Most of the reactions have been quite severe, especially when compared with the Swift-Ellis injections. The temperature ranges from 99 to 103 F, depending partially upon the amount of Hg injected. Pains in the back and legs were almost invariable, often being severe enough to require morphine for their control. Headache, nausea and vomiting were not unusual. Two of our cases exhibited clonic contractions of the muscles of the back and legs. We had no incontinence of the sphincters develop, nor motor paralysis—although a paretic developed a temporary hemiplegia about ten days following his dismissal from the hospital. In about 40% of the cases albumen and casts developed in the urine, especially when the mercury was pushed to the point of toleration. In fact, we felt convinced that some of the nausea, headache and malaise that developed when the treatment was pushed too rapidly might well be due to the toxic effect of the mercury upon the kidneys. Clear serum seemed to cause less of a reaction than sera in which there still remained some hæmoglobin. Heating the serum at 56 degrees C. for one hour instead of thirty minutes seemed to reduce the severity of the reaction somewhat.

Gradually increasing the bichloride of mercury from 1/100 gr. at the first injection to 1/25 in the later injections and increasing the dosage only as the reaction warranted it, is probably responsible for the lack of some of the unfavorable complications in this series. In ten cases we were unable to find a trace of mercury in the spinal fluid two days following an injection. So we feel that in cases that stand injection well, the treatments may follow closely upon the subsidence of the previous reaction. In cases in which the injection is followed by loss of weight and appetite with great weakness, especially in elderly people, a ten-day or even longer interval may be desirable—the urine being watched closely.

In order to estimate the results of this treatment we tried to find out: First, the subjective feelings of the patient. This we did by asking them to answer a printed set of questions. Seventy-five per cent. of the patients claimed to be improved, in one way or another, following the treatments. Allowing for the hope that a new remedy is bound to inspire, these patients showed more than their share of cheerfulness. This was frequently commented upon by the nurses who took care of them. In 20% of the cases this improvement was remarkable. Moreover, a large proportion of the patients paid something for their treatments, making every effort to have them continued.

The symptom of pain was especially ameliorated by the treatment. Lightning pains frequently subsided entirely. Headaches, especially in cerebro-spinal lues, were influenced very early. Girdle pains were much more resistant, persisting long after the pains in the legs had disappeared. Gastric crises were unfavorably influenced in many cases. Each treatment seemed to stir up another attack—although, it must be admitted that the crises were much less frequent following the treatment.

The ability of the patient to go back to a self-supporting existence seems a fair gauge of improvement. So far, nearly 45% of the patients treated are working full time.

Among the objective findings we considered:

Weight: nearly every patient lost weight following an injection. The average loss was three pounds, although some of the cases with gastric crises lost as high as ten pounds. Most of the patients would regain their weight in about ten days. About 35% of the patients showed a gain in weight following a series of six injections, after an interval of fifteen days with no medication. Three patients registered a large gain in weight up to twenty-two pounds in five injections. However, this was just as unusual as the rapid loss of weight.

In the physical examination, the reflexes that were found absent upon the first examination remained absent upon subsequent examinations following treatment. Areas of anaesthesia cleared up in about twenty per cent. of the cases exhibiting it. However, shifting of the areas of anaesthesia was not unusual, even without treatment. The Romberg sign and ataxia were definitely improved in about the same per cent. of cases. In the five

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cases showing retinal changes, two were entirely uninfluenced by treatment, two were sufficiently improved to go back to rough work, one case made a brilliant recovery to normal vision.

The spinal fluids, in general, showed the pleocytosis to be diminished progressively, not uncommonly reaching normal in five to eight treatments. The Nonne and Noguchi tests steadily diminished in intensity. The Wassermann test seemed to be influenced more slowly, at times lagging far behind the clinical improvement. In fact, in only five cases were we able to change a positive to a negative reaction. However, in 90% of the cases there was some reduction in the strength of the reaction. The Lange test was even more difficult to change to a negative reaction.

As to the relative efficacy of the treatment in the different forms of syphilis of the central nervous system: the results in paresis were poor. Four cases grew steadily worse, two remained stationary, one only appears to be arrested. In tabes the results were much more satisfactory. Symptomatic improvement was the rule. The majority returned to work with lessened pain and ataxia. Cerebro-spinal lues gave the best results. Of the five cases every one returned to work. Headache and cranial nerve involvement were improved early in the treatment.

Space allows only a summary of a typical case of each group.

Paresis (treated with a poor result).

A. H., 36,605, an American molder, age 46, giving a history of chancre 23 years ago and a "nervous breakdown" about eighteen months ago, treated by salvarsan and mercury. His pupils were quite sluggish, reflexes exaggerated, speech blurred, tremor of the tongue and hands. The Wassermann in the blood, spinal fluid, Nonne and Noguchi tests were positive. Cell count fifty lymphocytes. Lange positive. After treatment with five injections, extending over three months, the physical examination remained the same. The Wassermann in the spinal fluid was still positive, cells were reduced to seventeen, the Nonne and Noguchi still positive. Mentally the patient was much worse, now had delusions of grandeur and at times of persecution. Had to be committed to a state hospital.

Paresis (treated with a fair result).

J. H., 34,457, German bookkeeper, age 34, giving a history of chancre twelve years ago and a "nervous breakdown" about two years ago, treated with salvarsan and mercury. His pupils were quite sluggish, reflexes exaggerated, speech blurred, tremor of the tongue and hands. The Wassermann in the blood and spinal fluid, Nonne and Noguchi were positive. Cell count is fifty-five lymphocytes. After nine injections, extending over an interval of five months, the physical findings remained the same, except for a marked loss of tremor. Patient returned to work—the speech is not quite normal, is calm and cheerful. The Wassermann in the fluid is reduced in intensity, cells only three per cu. mm. The Nonne and Noguchi barely positive.

Tabes (treated with a good result).

J. F., an Armenian tailor, age 40, giving a history of a chancre eight years ago, well treated with mercury and salvarsan, complained of numbness and cold in the legs and some dizziness. He showed sluggish pupils, absent patellar and achilles reflexes, hyperaesthesia to cold. The Romberg was positive, with marked ataxia. The Wassermann in the blood, and spinal fluid was positive, as were the Nonne and Noguchi tests. There were six lymphocytes per cu. mm. Seven injections,

over a five-months interval, saw him back to work, quite cheerful, with no pains in the legs and much less ataxia. The Wassermann in the fluid was now negative, the cell count was now six cells per cu. mm. The Nonne and Noguchi were questionable.

Cerebro-spinal lues (treated with a good result).

F. I., German baker, age 35, had a history of failing vision, headache, and malaise treated with five injections of salvarsan plus mercury. His pupils reacted very slowly to light—there was a marked optic neuritis and choreoditis. The Wassermann was negative in the blood but quite positive in the spinal fluid. The cell count was 175 cells per cu. mm. Four injections entirely cleared up his headache and sent him back to work. The fundi were reported normal. The Wassermann in the spinal fluid became normal, the cell count was reduced to six cells, the Nonne and Noguchi were negative.

In conclusion it can be said that the reactions following the injections have been severe in some cases but no alarming symptoms have developed. The majority of the patients have been subjectively improved, with increased ability to work. Ataxia was lessened but the reflexes were not regained. The spinal fluid showed lessened pressure, decreased cell count, reduction in the intensity of the globulin tests, with a tardy reduction of the Wassermann reaction. Paresis, with the possible exception of very early cases, responds poorly to this treatment. Tabes is frequently symptomatically benefited. Cerebro-spinal lues responds excellently to treatment.

THE ECONOMIC IMPORTANCE OF THE WELL POISED PERSON.*

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The purpose of this paper is to emphasize the importance of the correction of the mechanics of the human body in the treatment of disease. In most of the cases, especially those of a chronic nature, which come to the general practitioner, and more often to the orthopedic surgeon, either directly or indirectly, the anatomy or physiology is faulty.

It has been within a very recent period that definite regional anatomical knowledge of the human body has been acquired. The regional anatomy and the relation of posture to the proper functioning of the various organs, have been most thoroughly investigated. The facts set forth by Goldthwait⁶ and others concerning the influence of posture on the efficiency of the human body, can readily and satisfactorily, be demonstrated, by any physician.

The normal individual is one whose anatomical structure is correct. There exists no defect in the bony or muscular structures, for the work of weight bearing. There is no body strain. The various organs perform their functions most efficiently. Such individuals, who are leading a perfectly hygienic life, are few in any community. The vast number of persons, those who we are constantly called upon to treat, make up to a large extent the field of chronic medicine. From an anatomic standpoint, these last mentioned humans may be placed in definite groups. These groups or types represent deviations from the nor-

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